DOCUMENT RESUME

ED 215 009 UD 021 880

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TITLE Comparative Studies of Cognitive Styles: Implications for the Education of Immigrant Students.
PUB DATE Dec 81
NOTE 22p.; Paper presented at the Conference on The Education of Ethnic Minority Immigrants (Miami, FL, December 13-16, 1981).
AVAILABLE FROM University Press of America, P.O. Box 19101, Washington, DC 20036 (write for price).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Acculturation; *Cognitive Style; *Cultural Influences; *Ecological Factors; Educational Planning; Elementary Secondary Education; Higher Education; Immigrants
IDENTIFIERS *Field Dependence; *Field Independence

ABSTRACT

Differences in cognitive styles or intellectual behavior can be attributed to different ecological and cultural influences on individuals. These influences, such as type of subsistence economy, social stratification, socialization, and role specialization, affect the development of a particular cognitive style which is determined by whether an individual relies on the external environment or works on it. Individuals who tend to accept the external environment are considered relatively more field dependent, while those who act on it are considered relatively more field independent. The style which develops under these traditional ecological-cultural conditions is subject to further alteration by acculturative influences, such as education, a shift from traditional economy to wage employment, and urbanization. Among immigrants, acculturative factors may encourage a tendency toward field independence and thus reduce large cultural variations in populations. In some cases, however, the traditional cognitive-adaptive style may persist and lead to numerous cultural differences in societies that are host to immigrants. In such societies, the implications of different cognitive styles for the educational process should be considered in planning educational services. To treat all students as culturally and psychologically identical is to interpret stylistic differences as deficits rather than qualitative, socially enriching variations. (Author/MJL)

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# COMPARATIVE STUDIES OF COGNITIVE STYLES:

## Implications for the Education of Immigrant Students.

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Paper presented at the conference "The Education of Ethnic Minority Immigrants"

Florida International University

December 13-16, 1981

UD 021 880

## Outline

Introduction

Culture and Cognition

- Three approaches: Intelligence, Specific Skills, Cognitive Style
- Field Dependence - Field Independence Cognitive Style
- Ecological and Cultural Influences on Cognitive Style
- Acculturation Influences on Cognitive Style

Implications for Education of Cognitive Style

- Students' Learning
- Teachers' Teaching
- Student-Teacher Interaction
- Career Differentiation

References

Abstract

Immigrant peoples are known to bring with them many cultural and psychological characteristics which were adapted to, and were developed in, their original environments. Moreover, many traditional cultural practices persist across generations during acculturation in the new society, and continue to foster the development of psychological differences between groups. Among the known variations in human behavior are differences in perceptual and cognitive abilities and their inter-relationships ("cognitive styles"). These stylistic differences have been linked to a number of ecological and cultural factors which are thought to be responsible, such as subsistence economy, social stratification, socialization practices and specialized role experience. Many of these community and family practices are known to characterize the life styles of immigrant groups long after their immigration, and hence may sustain continuing variation in cognitive styles. In this paper evidence is reviewed which demonstrates the ecological and cultural origins of variation in cognitive styles, and which suggest the persistence of this variation after immigration. The implications of these findings for teaching and learning, for the design of school programs, and for the selection and placement of students are considered.

Introduction

It is obvious to any traveller that cultures and individuals differ from place to place; these differences have been the stuff of tales of exploration and of anthropology, and need no elaborate documentation here. The general position taken in this paper is that these differences arise because peoples around the world develop cultural and psychological characteristics which help them to adapt to the kinds of problems which they frequently encounter. These characteristics serve people well when they remain in the place where they developed; however, when individuals migrate to other settings, and meet other kinds of problems, there may be a miss-match between the individual and the requirements of living in the new place.

This paper is concerned with one kind of behavior, the "cognitive" (or intellectual) functions, and to some extent it ignores other important features of human development, such as emotional and social life. It asks the question "What do we know about cognitive variation across cultures, and about the sources of this variation?" Now, for some of you, this may be a dangerous, even a subversive, question; but set in the context of the issue of human adaptation, it becomes a small but natural part of our attempts in the social and behavioral sciences to understand the nature and function of human variation.

The way in which we understand cognitive behavior is an important element in our approach. If one accepts uncritically the notion of "general intelligence", then serious problems arise when we work cross-culturally. However, if one moves away from such a rigidly quantitative approach, to the more qualitative notion of "cognitive styles", then many of the problems disappear (Berry and Dasen, 1974).

The effects of ecological and cultural factors on the development of cognitive styles will be examined, using as an example the Field Dependent-

Field Independent cognitive style (FD-FID) of the late Hy Witkin (Witkin and Goodenough, 1981), and the eco-cultural model of Berry (1976). The effects of cultural change on these styles will also be considered. Experiences both prior to migration, and after, are known to alter the behavior of individuals. What do we know about the effect of "Westernizing" influences in the various countries of origin, and of acculturation in host countries, on the cognitive styles of migrants? (Berry, 1981)

A final issue to be addressed is that of the educational implications of these observations and arguments. If people develop differently in their cultures of origin, and if these differences persist to some extent over their life span in the new culture, what needs to be done to the educational and other social systems of host countries in order to meet the needs of immigrants?

Culture and Cognition

In current work on cognition cross-culturally, three general positions may be discerned. All three share an interest in describing and interpreting the cognitive performance, the cultural context of that performance, and the relationships which may exist between them. They differ in a number of ways, which are illustrated in Figure 1.

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Figure 1 here

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The conventional approach has been to take a standard test of general ability or "intelligence" and to administer it to all and sundry. Usually the only modification to the test has been its translation, or to make some minor variation in content. Two assumptions are typically made: one is that the cultural life of the test developer and the cultural life of the test taker differ in only one important respect, that of language. The other is that the

cognitive abilities wich are characteristic of the cultural life of the test developer and those of the test taken differ in ony one respect, that of level of development.

These two assumptions are illustrated in the upper portion of Figure 1. First, elements in the cultural context are treated more or less as a unit (solid boundary around elements on the left), and, second, the cognitive abilities are assumed to be a single package (solid boundary on right). Test scores are then usually interpreted in terms of populations having bigger or smaller packages. For example, Vernon (1979, p.7) has noted that it is commonly assumed that intelligence is a "homogeneous entity or mental power that, like height or weight, can vary in amount or in rate of growth or decline . . . " His own empirical work (Vernon, 1969) illustrates these assumptions.

With respect to the first assumption, it is clear to me that cultural differences have not been taken seriously in the debate on population differences in intelligence. And with respect to the second assumption, little attempt has been made to find out what (perhaps different) cognitive abilities are actually in place in various groups, and how they are structured. Given these two errors of omission, the great logical error of commission is then performed: if the cultures are not really different, if the abilities are not really different, then the differences in test performance must be due to different levels of development. However, from the point of view of cultural relativism, if cultural differences are real and large, and if abilities develop differentially in adaptation to these differing contexts, then differences in test performance cannot logically be claimed to be differences in levels or amount of development.

An alternative to this approach is that taken by workers in "cognitive anthropology" (e.g., Cole et al., 1971). From their perspective, a

single feature of the context (such as a specific role or a particular experience) is linked to a single performance (such as performance on a categorization task, or accuracy on a test of quantity estimation); this approach is illustrated in the mid portion of Figure 1. They contrast their "notion of culture-specific skills" with general ability theory (Cole et al., 1971, p. xiii), which often asserts that in some cultures, cognitive development is pushed further than in some other cultures (i.e. that levels or amount of intelligence differs). Assuming that cognitive processes are universal (Cole et al., p. 214; Cole and Scribner, 1974, p. 193), they argue that "cultural differences in cognition reside more in the situations to which particular cognitive processes are applied, than in the existence of a process in one cultural group and its absence in another" (Cole et al., 1971, p. 233). This emphasis on the particular, and culturally relative, nature of cognitive skills has meant that Cole and his co-workers do not search for <u>patterns</u> in their data. Generally, they appear unconcerned whether performance 1 is related to performance 2, or whether cultural element 1 tends to be experienced along with cultural element 2 in their sample. Unlike intelligence testers, they do not assume any universal pattern or structure in their skill data; indeed they seem uninterested in such a question. Similarly, they also seem uninterested in how the numerous cultural elements may be organized in a cultural system in which the individual develops.

The two approaches to understanding the relationships between culture and cognition thus far considered have differed in their acceptance of cultural relativism and in their concern for systematic relationships. The approach taken by <u>intelligence</u> testers ignored cultural relativism but assumed a universal structure in relationships; the approach taken by those interested in <u>specific</u>

skills assumed the position of cultural relativism, but ignored systematic relationships. The approach taken by researchers into cognitive styles also assumes the position of cultural relativism, but in addition, searches for systematic relationships among abilities, among elements of the cultural context, and between patterns of contexts and abilties (see lower part of Figure 1).

One basis for this approach is in the work of Ferguson (1954, 1956) who argued that "cultural factors prescribe what shall be learned and at what age; consequently different cultural environments lead to the development of different patterns of ability" (1956, p. 121). Further, he argued that through overlearning and transfer, cognitive abilities become stabilized for individuals in a particular culture. Both cultural relativism and systematic relationships are thus implicated in this approach, and these have been adopted in much of the work on cognitive style.

A recent review of the research on various cognitive styles (Goldstein and Backman, 1978) makes it clear that while sharing a general approach, there are many important differences among the numerous research traditions. This need not be a problem here, for only one has received any substantial treatment in the cross-cultural field, that of field dependence - field independence (Witkin et al., 1962; Witkin and Goodenough, 1981).

This particular cognitive style includes not only cognitive (intellectual or perceptual), but also some social and emotional characteristics; this makes it a particularly useful approach to understanding the individual as a whole. The central feature of this style is the "extent of autonomous functioning" (Witkin, Goodenough and Oltman, 1979); that is, whether an individual characteristically relies on the external environment as a given, in contrast to working on it, is the key dimension along which individuals may be placed. As the name suggests, those who tend to accept or rely upon the external envi-

ronment are relatively more Field Dependent (FD), while those who tend to work on it are relatively more Field Independent (FID). The construct is a dimension, the poles of which are defined by the two terms, FD-FID; individuals have a characteristic "place" on this dimension, reflecting their usual degree of autonomy (Witkin and Goodenough, 1981). However, individuals are not "fixed" into this usual place, since relatively more field-independent people may shift to a more field-dependent approach as the situation warrants; this "mobility" of cognitive style is an important feature of the style. Moreover, specific training has also been shown to affect one's usual style or approach.

This most recent conceptualization, which draws together perceptual, cognitive and social characteristics, is much broader than the original use of the term by Witkin et al., (1962). Over the course of research the field-dependent-independent dimension has referred to a series of components which has evolved as the research programme advanced. Initially it included only the contrasting ways in which individuals establish the upright in tests involving tilted frames or tilted rooms; more field-dependent people tended to rely upon the external frame, while more field independent persons tended to rely upon internal standards. Later on it came to include, as well, the tendency to separate or disembed a small item from a larger context; more fielddependent individuals had difficulty in overcoming the embedding context, while those more field-independent found it easier to overcome the influence of the organized complex. Later still, the dimension grew to include the articulated-vs-global field approach. Here, cognitive tasks were presented whose solution depended upon taking an essential element out of the context in which it was presented, and on restructuring the problem material so that the element became used in a different context; more field-dependent persons were less likely to restructure (and hence not solve) the problem, whereas more fieldindependent persons did

restructure and more often arrived at a correct solution. Most recently the whole area of autonomy in social behavior and interpersonal competencies has come to be included in the FD-FID cognitive style as well; those who are more field dependent tend to accept social influence more, and to be more competent in social relations, while those more field independent tend to be more independent of social influence, and to exhibit less social competence.

The current conceptualization of the field dependent-field independent cognitive style, which we employ in this study, is that arrived at by Witkin and Goodenough (1981): autonomy of external referents in perceptual and social behavior. It has two indicators or components which are termed "restructuring skills" and "limited interpersonal competencies". The field dependent-independent cognitive style is thus a pervasive dimension of individual functioning, showing itself in the perceptual, intellectual, personality and social domains (Witkin and Goodenough, 1981), and it tends to be relatively stable over time and across situations. It "involves individual differences in process rather than content variables; that is to say, it refers to individual differences in the 'how' rather than the 'what' of behavior" (Witkin and Goodenough, 1981, p. 57). Since it refers to the 'how' of one's behavior, the field dependence-independence construct avoids some of the difficulties of the "ability" approach, where the focus is on the "how much"; this is particularly important in our use of the dimension cross-culturally.

Individual and group differences in the FD-FID cognitive style have been traced to two broad categories of influence: eco-cultural and acculturational. In the first, a cognitive style is viewed as a way of behaving which helps individuals and groups to cope with (adapt to) prevailing problems in their immediate environment. In the second, the style which has developed under these traditional conditions becomes altered to respond to new cultural influences;

for the immigrant these typically are initial "Westernization" while still at home (e.g. by education, telecommunications), and the whole set of new influences which innundate him on arrival in the new setting. The reason for distinguishing these two broad sets of influences is that what may be adaptive in the traditional setting may not be adaptive in the new one.

What do we know about these two types of influence? In Table 1 are

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Table 1 here

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outlined some of the important influences: beginning with the ecological variables, an ecological approach asserts that interactions between an organism (in pursuing satisfaction of its primary needs) and its habitat will generate characteristic patterns of economic, demographic, sociocultural,and biological adaptations. The relationships in such a system are probabilistic, rather than guaranteed productions. One pervasive set of adaptations has been that of the "nomadic style", and incorporates a nomadic settlement pattern, a low concentration of population, and a hunting and gathering subsistence base. An adaptation in sharp contrast to this may be termed a "sedentary style", and includes a sedentary settlement pattern, a higher population concentration, and an agricultural economic base. Other subsistence activities, such as herding and fishing, have variable relationships to these demographic elements (see Berry, 1976, p. 119). This basic contrast in settlement style is evident in much of the background literature of studies of cultural ecology.

In adaptation to these contrasting settlement styles are a set of cultural variables. In those societies with a nomadic style, there are likely to be relatively low levels of role diversity and sociocultural stratification; these have been termed "loose" by Pelto (1968). In contast, those societies

with a sedentary style are likely to have higher levels of role diversity and stratification; these have been termed "tight" by Pelto. Also lying along the dimension are the characteristic socialization practices examined by Barry, Child, and Bacon (1959). In their classical analysis, they were able to demonstrate that societies with a nomadic style tended to foster "assertion" during child rearing, whereas those with a sedentary style tended to foster "compliance".

The importance of these contrasting socialization emphases is that Witkin et al. (1962) have shown such emphases to be systematically related to the development of cognitive style among individuals within Western society. In the Western studies reviewed by Witkin and Goodenough (1981), socialization practices that emphasize strict rules and overprotection (cf. "compliance") tend to foster field dependence. In contrast, those practices that encourage separation from parental control (cf. "assertion") tend to foster the development of higher levels of field independence. In the cross-cultural studies reviewed by Witkin and Berry (1975) a similar relationship was evident. But, in addition, there is strong evidence that differences in the broader societal pressures emanating from tight and loose structures may reinforce such specific socialization emphases.

A final set of variables (in Table 1) deals with the impact of other cultures on both the traditional culture and individuals in it. These acculturative influences include education (very often of a Western type), a shift from traditional economic activity to wage employment, and an increase in settlement size and population density (urbanization). It is considered that both education and wage employment often encourage the analytic activity included in the field-independent cognitive style. Thus, an increase is likely in field-independence with increasing acculturation. However, in some cases

there is a persistence of the traditionally-adaptive cognitive style for many generations during acculturation (Berry, 1981).

Both the ecological and cultural factors found among subsistence-level peoples are predictive of greater FD among agriculturalists and greater FID among hunters and gatherers. The evidence presented by Berry (1976), and the bulk of the evidence reviewed by Witkin and Berry (1975) support this generalization. Whether analyzed at the sample or individual level, ecocultural adaptation clearly accounts for a high proportion of group and individual differences in cognitive style development. In other words, samples that were nomadic and hunting and gathering in subsistence pattern were relatively FID in contrast to the sedentary agriculturalists. Influences stemming from acculturation also contribute to the distribution of scores on these tests. In all cases, though, acculturation (mainly through a form of Westernization) is less strongly related than is ecocultural adaptation.

In the outline of the concept of cognitive style, mention was made of "social autonomy" being theoretically related to "restructuring" within the FID cognitive style, and of "interpersonal competencies" being related to the FD end of the dimension. Social behaviors may also thus be included within the framework. More specifically, it may be predicted that individuals who grow up in a tight, stratified, and densely populated society, such as those often found in agriculturally based groups, will be more sensitive to group needs and more responsive to group requirements. In contrast, those developing in loose social units might be expected to be more independent of authority and less conforming to group pressure. A first examination (Berry, 1967) of this prediction contrasted samples from two cultures on a conformity task. This involved a situation where individuals are requested to judge the length of a line in the face of a false social norm. Differences between the two groups were as expected:

in the tight samples, judgments were significantly closer to the suggested group norm than in the loose samples. At this group level of analysis, there was correspondence between the two behavioral domains that are theoretically related in the FD-FID cognitive style (Berry, 1979).

In summary, it should be clear that individuals are different from one another in cognitive style; to the extent that ecological and cultural factors play a communal role, we may also say that groups are likely to differ in cognitive style as well. Acculturational influences may work, both before and after immigration, to reduce these large cultural variations; however, cultural groups do tend to persist in traditional patterns of behavior in their new home (see Berry 1981 for an overview of patterns of acculturation). Host societies are thus likely to encounter nearly the full range of these cross-cultural differences among immigrant peoples. What does this mean for the educational process?

Implications for Education

In plural societies, institutions must increasingly "open up" to accommodate the broadening variety of clients. In some countries (for example Canada and Australia) there are official national policies of multiculturalism, which recognize cultural diversity to be a resource rather than a problem, and which encourage the maintenance and development of numerous cultural traditions within the framework of the larger society. For schools, this policy and ideology raises many questions, some of which are now receiving substantial attention (Samuda, Berry and Laferriere, 1981). One of these issues is how to work with such a variety of culturally-based cognitive styles in an educational system.

A major review of the educational implications of the FD-FID cognitive style was completed in 1977 by Witkin and his colleagues. The review is an

extremely valuable source, and this section follows its structure closely. In that review Witkin et al. (1977) examined four major questions: how students learn, how teachers teach, how students and teachers interact, and the role of cognitive style in career differentiation.

Student learning styles are known to vary in relation to cognitive style. First, relatively FD students tend to be better than FID students at learning and remembering social material. There is no known difference in sheer learning ability or memory; however, the relevance of social materials to FD students give them the edge in this domain. Second, reflecting their external orientation FD students are likely to learn better with external reinforcements, while FID students tend to learn better under conditions of intrinsic motivation. And third, FID students have been shown to learn better than FD students when the material lacks organization; however, the level of learning does not differ when the materials are already structured. All three differences in learning styles are directly predicted by the known orientations of students with differing cognitive styles. A foreknowledge of the likely style of individuals or groups of students, then, will be useful in the choice and presentation of educational materials.

Turning to the second area, that of teaching style, Witkin et al. (1977) have shown that relatively FID teachers are more likely to assume the responsibility for directing the teaching situation, while FD teachers favor teaching situations that allow interaction with students. Furthermore, FID teachers, but not FD ones, "feel that informing the student when a response was incorrect and, in addition, telling him why it was incorrect, was effective in enhancing student learning" (p. 29). Thus, the cognitive style of the teacher is also important, and this raises the question: what happens during student teacher <u>interactions</u>, when there is a stylistic match or mismatch between them?

A few answers have been indicated by Witkin et al. (1977). When the cognitive styles of students and teachers are matched, they view each other more positively than when they are not matched; this differential evaluation includes views about personal and about intellectual characteristics. Moreover, when cognitive styles are matched, evaluations of student performance are higher than when they are mismatched. This latter finding may not indicate bias but simply better actual performance (of both teaching and learning) when cognitive styles are similar.

Finally, Witkin et al. (1977) have brought together substantial evidence that a student's cognitive style is an important factor in career paths; thus, it is not only general ability which is operating here, but also the profile or organization of these abilities which is important (see Figure 1). With respect to vocational interests, relatively FID students tend to prefer positions where analysis is required, but social relations are not; in contrast FD students tend to prefer a job with a "people emphasis". Actual vocational choices are also related to cognitive style: in the academic setting, relatively FD students tend to specialize in the humanities, languages, clinical psychology, nursing and social or human services; FID students tend to choose the sciences, mathematics, engineering and experimental psychology. Despite these general orientations, overall achievement is not related to cognitive style. Thus, there is evidence for better performance in the "appropriate" special area, but across the board, it is not possible to claim that one is, for example, a better linguist than another is an engineer.

In addition to these observations about teaching and learning, similar arguments may be made in other educational spheres. In the design of school programs and the development of curriculum, it should be possible to make the material relevant to student interests, and to "pitch" the material in the

appropriate way. And in the areas of testing, selection, guidance and counselling, an appreciation of stylistic differences, and their possible cultural roots, should permit a more sensitive, less rigid and less quantitative approach to student needs in a culturally plural system.

In summary, then, there are clear and documented implications of the cognitive styles of individuals in the educational process. While large individual differences are normally present in all cultural or ethnic groups, it is true to say on the basis of the section on cultural influences, that we are likely to find more FD persons from those societies which are traditionally tight agricultural groups than in looser social structures. Similarly, based upon acculturational influences, we are likely to find more FID persons in those societies which have been more exposed to "Westernization" than those which were more traditional before emmigration.

Armed with these general relationships, it should be possible to provide educational services which take the students' (and their families') cognitive style into account, rather than attempt to treat all as if they were identical culturally and psychologically. To ignore these stylistic differences is to court the incorrect (and unjust) interpretations which have stemmed from unilinear "general intelligence" position - that differences are deficits, rather than qualitative variations which can enrich a school, a community and a nation.

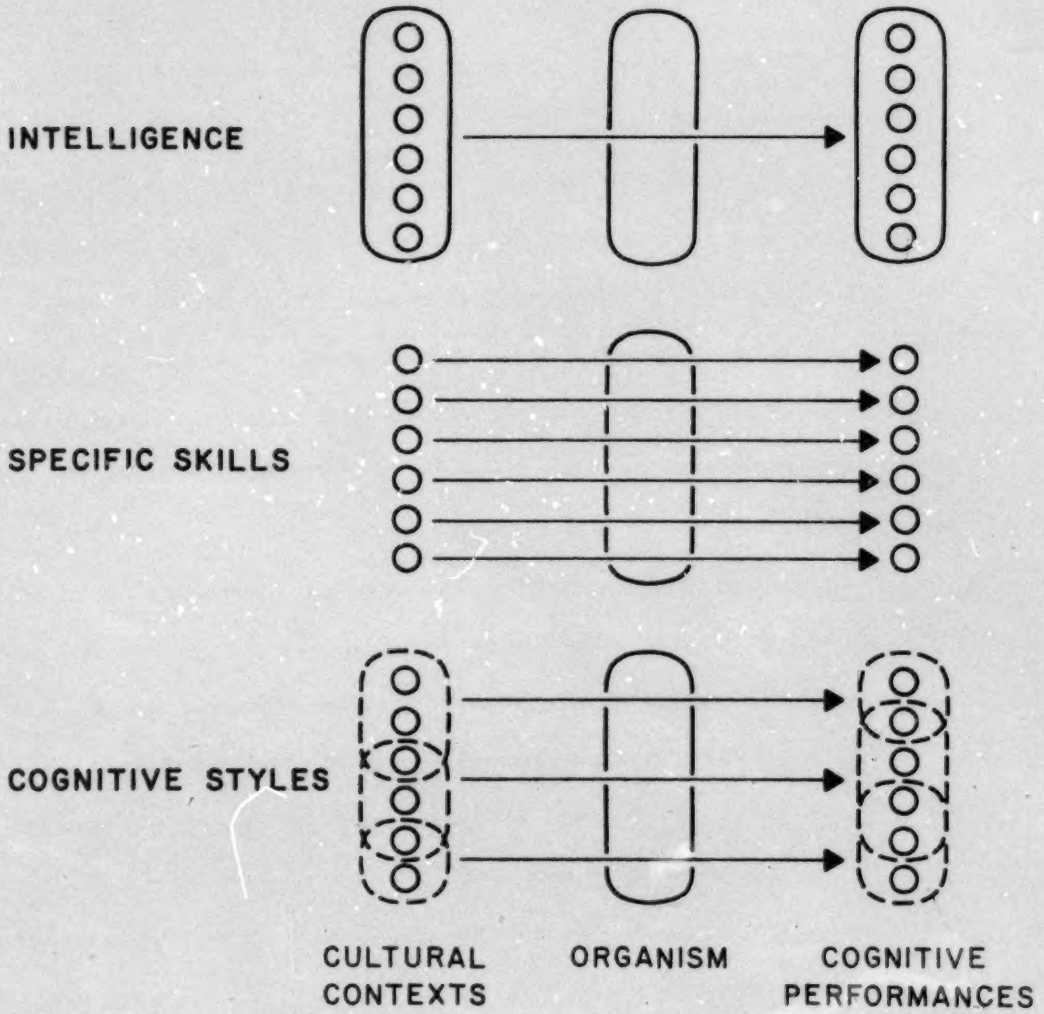


*Figure 1. Schematic Diagram of Three Approaches to Relationships Between Cultural Contexts and Cognitive Performances.*

Table 1 - Variables Influencing the Development of Field Dependent-Field Independent Cognitive Style

| Influence | Prediction of Cognitive Style<br>Field Independent ⟷ Field Dependent | |
|---|---|---|
| **Ecological** | | |
| Subsistence pattern | hunting, gathering | agricultural |
| Settlement pattern | nomadic | sedentary |
| Population density | low | high |
| **Cultural** | | |
| Stratification | low ("loose") | high ("tight") |
| Family type | nuclear | extended |
| Socialization emphases | assertion | compliance |
| **Acculturation** | | |
| Western education | high | low |
| Wage employment | high | low |
| Telecommunications | high | low |

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